CIVIL AIM CONSULTANTS & ENGINEERS

(Building Geo-Tech & Highway Materials Testing Laboratory)

An ISO 9001-2015 Certified Company
NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

Name of Client	:	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Contractor/Agency	:	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Total Bill Amount	:	Rs.40.56 Lakhs
Date of Inspection	:	22.07.2024
Status of Bill	:	1st and Final Bill
In the Presence of	:	(a) **Assistant Engineer (Yelahanka Division),** BBMP, Bangalore.
	:	(b) **Mr. Yash,** Engineer M/s. Civil Aim Consultants & Engineers, Bangalore

Item No.	Description of the Item	Unit	Qnty	Comments / observations
1	Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of Tack Coat on the	Sqm	2035.44	Work done up to the billed quantity and Quality is satisfactory
2	Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of Tack Coat on the	Sqm	1835.68	Work done up to the billed quantity and Quality is satisfactory
3	Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of Tack Coat on the	Sqm	2800.00	Work done up to the billed quantity and Quality is satisfactory

A.E.E.

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
Ph: 9591618639, GSTIN: 29CNWPD9510K1ZB, Email: civilaimconsultants@gmail.com

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 15.06.2024

GRADATION FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 15.06.2024

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	162	162	1.6	98.4	95-100
22.4	2635	2797	28.0	72.0	60-80
11.2	2180	4977	49.8	50.2	40-60
4.75	1836	6813	68.1	31.9	25-40
2.36	1158	7971	79.7	20.3	15-30
0.600	554	8525	85.3	14.8	8-22
0.075	1160	9685	96.9	3.1	0-5

A.E.E.

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 01.07.2024

GRADATION FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 01.07.2024

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	145	145	1.5	98.6	95-100
22.4	2639	2784	27.8	72.2	60-80
11.2	2158	4942	49.4	50.6	40-60
4.75	1845	6787	67.9	32.1	25-40
2.36	1165	7952	79.5	20.5	15-30
0.600	623	8575	85.8	14.3	8-22
0.075	1159	9734	97.3	2.7	0-5

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 10.07.2024

GRADATION FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 10.07.2024

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	165	165	1.7	98.4	95-100
22.4	2455	2620	26.2	73.8	60-80
11.2	2298	4918	49.2	50.8	40-60
4.75	1798	6716	67.2	32.8	25-40
2.36	1156	7872	78.7	21.3	15-30
0.600	536	8408	84.1	15.9	8-22
0.075	1187	9595	96.0	4.1	0-5

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Job No.: CACE/BBMP/SC/QC/2024-25 Date: 15.06.2024

Aggregate Impact Value

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	15.06.2024

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	298	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.78	22.19	**21.99**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/SC/QC/2024-25 Date: 01.07.2024

Aggregate Impact Value

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	01.07.2024

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	85.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	296	296.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.11	22.38	**22.24**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/SC/QC/2024-25 Date: 10.07.2024

Aggregate Impact Value

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2024

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	298.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.19	22.47	**22.33**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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ಜ.ಬ.ಬ.ಮ. ಬೆಂಗಳೂರು-106

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 01.07.2024

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	01.07.2024

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	11.60	12.20	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	12.60	13.10	
	Combined Flakiness & Elongation index	24.20	25.30	

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ಬೆ.ಮ.ನ.ಪಾ. ಬೆಂಗಳೂರು-106

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 10.07.2024

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	10.07.2024

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	12.10	12.60	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	13.20	13.50	
	Combined Flakiness & Elongation index	25.30	26.10	

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 17.06.2024

ATTERBERG LIMITS TEST FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 15.06.2024 to 17.06.2024

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	20.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 03.07.2024

ATTERBERG LIMITS TEST FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 01.07.2024 to 03.07.2024

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 12.07.2024

ATTERBERG LIMITS TEST FOR WMM

Client : **Executive Engineer,** Yelahanka Division, BBMP, Bangalore.

Agency : **M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.

Name of Work : Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 10.07.2024 to 12.07.2024

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

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ಯಲಹಂಕ ಉಪನಗರ ಉಪವಿಭಾಗ.
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For CIVIL AIM CONSULTANTS & ENGINEERS

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NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/SC/QC/2024-25 Date: 15.06.2024

TEST REPORT

Client	:	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	:	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the work	:	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
IS Code	:	IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009)
Source of location	:	Hot mix Plant, Bangalore, VG 30
Date of testing	:	15.06.2024

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	48	Min 45
2	Softening point, ^{0}C	51	Min. 47
3	Ductility at 27^{0}C, cm	> 100	Min. 40
4	Flash Point, ^{0}C	284	Min. 220

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A.E.E.

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-106

For CIVIL AIM CONSULTANTS & ENGINEERS .

Authorised Signatory

No. 01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah Layout, Nagasandra, Bangalore - 560 073.
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Job No.: CACE/BBMP/SC/QC/2024-25 Date : 15.06.2024

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2024

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	410	8.20	8.20	91.80	90 - 100	
9.5	488	9.76	17.96	82.04	70 - 88	
4.75	636	12.72	30.68	69.32	53 - 71	
2.36	689	13.78	44.46	55.54	42 - 58	
1.18	524	10.48	54.94	45.06	34 - 48	
0.600	540	10.80	65.74	34.26	26 - 38	
0.300	482	9.64	75.38	24.62	18 - 28	
0.150	366	7.32	82.70	17.30	12 - 20	
0.075	482	9.64	92.34	7.66	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	409	8.18	8.18	91.82	90 - 100	
9.5	542	10.84	19.02	80.98	70 - 88	
4.75	543	10.86	29.88	70.12	53 - 71	
2.36	568	11.36	41.24	58.76	42 - 58	
1.18	510	10.20	51.44	48.56	34 - 48	
0.600	549	10.98	62.42	37.58	26 - 38	
0.300	682	13.64	76.06	23.94	18 - 28	
0.150	345	6.90	82.96	17.04	12 - 20	
0.075	510	10.20	93.16	6.84	4 - 10	

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Job No.: CACE/BBMP/SC/QC/2024-25

Date: 15.06.2024

Aggregate Impact Value

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2024

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.25	22.66	22.45

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Date : 15.06.2024

Job No.: CACE/BBMP/SC/QC/2024-25

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2024

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.5	11.9	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.6	13.8	
	Combined Flakiness & Elongation index	25.10	25.70	

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A.E.E.

Authorised Signatory

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Date : 17.06.2024

Job No.: CACE/BBMP/SC/QC/2024-25

Specific Gravity And Water Absorption Test

Client	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	15.06.2024 to 17.06.2024

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2021	2023	2025	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1268	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2017	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	749	749	749	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.684	2.685	2.686	2.685
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.702	2.707	2.712	2.707
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.25%	0.30%	0.35%	0.30%

A.E.E.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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Job No.: CACE/BBMP/SC/QC/2024-25

Date : 06.07.2024

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
AGENCY	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
NAME OF THE WORK	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	06.07.2024

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	473
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	27.5	27
7. Bitumen content in %	5.50	5.40
8. Average	5.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Test 1 Cummulative Weight Retained	Test 1 %Cummulative Retained	Test 1 % Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	17.5	17.5	3.7	96.3	90 - 100
9.5	60.9	78.4	16.6	83.4	70 - 88
4.75	93.5	171.9	36.4	63.6	53 - 71
2.36	40.5	212.4	45.0	55.0	42 - 58
1.18	35.2	247.6	52.4	47.6	34 - 48
0.600	55.8	303.4	64.2	35.8	26 - 38
0.300	42.6	346	73.2	26.8	18 - 28
0.150	37.2	383.2	81.1	18.9	12 - 20
0.075	52.4	435.6	92.2	7.8	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Test 2 Cummulative Weight Retained	Test 2 %Cummulative Retained	Test 2 % Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	18.2	18.2	3.8	96.2	90 - 100
9.5	63.9	82.1	17.4	82.6	70 - 88
4.75	90.4	172.5	36.5	63.5	53 - 71
2.36	46.2	218.7	46.2	53.8	42 - 58
1.18	35.9	254.6	53.8	46.2	34 - 48
0.600	54.2	308.8	65.3	34.7	26 - 38
0.300	43.9	352.7	74.6	25.4	18 - 28
0.150	33.6	386.3	81.7	18.3	12 - 20
0.075	48.2	434.5	91.9	8.1	4 - 10

A.E.E.

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Job No.: CACE/BBMP/SC/QC/2024-25

Date: 21.06.2024

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	:	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	:	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	21.06.2024

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.52	10.22	9 Kn (min)
2	Marshal flow, mm	2.26	3.15	2 – 4
3	Percent air voids in Mineral Aggregate	13.84	14.63	13 – 15
4	Voids in Compacted Mix	3.49	3.24	3 – 6
5	Percent Voids filled with Bitumen	71.63	72.48	65 - 75
6	Density, g/cc	2.25	2.26	--

A.E.E.

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Job No.: CACE/BBMP/SC/QC/2024-25

Date: 06.07.2024

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	:	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	:	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	06.07.2024

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.63	9.18	9 Kn (min)
2	Marshal flow, mm	2.25	3.49	2 – 4
3	Percent air voids in Mineral Aggregate	13.89	14.54	13 – 15
4	Voids in Compacted Mix	4.43	5.26	3 – 6
5	Percent Voids filled with Bitumen	70.82	71.84	65 - 75
6	Density, g/cc	2.25	2.26	--

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Job No.: CACE/BBMP/SC/QC/2024-25

Date: 18.07.2024

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Yelahanka Division, BBMP, Bangalore.
Agency	:	**M/s. Sathya Constructions (Prop. Rajeshwaran Satheesh),** Bangalore.
Name of the Work	:	Supplying and laying of Various Bituminous mixes for repair of potholes and Road cut Portions from established Hot Mix Plant of minimum 50/80 TPH capacity (In Fully Working Condition) including manufacturing, supplying and laying including the cost of all materials, machineries, labours, consumables etc complete for a period of 2 years in Yelahanka Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	18.07.2024

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.36	10.69	9 Kn (min)
2	Marshal flow, mm	2.55	3.48	2 – 4
3	Percent air voids in Mineral Aggregate	13.62	14.81	13 – 15
4	Voids in Compacted Mix	3.48	3.49	3 – 6
5	Percent Voids filled with Bitumen	72.45	73.63	65 - 75
6	Density, g/cc	2.25	2.26	--

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